FIVE-YEAR REVIEW REPORT

Saltville Waste Disposal Ponds

Superfund Site

Saltville, Virginia

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Region III

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Five-Year Review (Level I)
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I. Introduction

Authority Statement and Purpose. EPA Region III conducted this review pursuant to CERCLA Section 121(c), NCP Section 300.400(f)(4)(ii), and OSWER directives 9355.7-02 (May 23, 1991), and 9355.7-02A (July 26, 1994). It is a Statutory Review. The purpose of a five-year review is to ensure that a remedial action remains protective of public health and the environment and is functioning as designed. This document will become a part of the Site file. This Type Ia review is applicable to a site at which response is ongoing.

Site Characteristics.

The Saltville Waste Disposal Ponds Superfund Site ("Site") is part of Olin Corporation's former Saltville facility located along the north bank of the North Fork of the Holston River ("river") between the towns of Saltville and Allison Gap, in western Smyth and eastern Washington Counties, Virginia. The river forms the southern border of the Site and Virginia State Route 611 runs along the northern border at the foot of Little Mountain. The Site consists of the Former Chlorine Plant Site and two waste ponds, Ponds 5 and 6, and areas to which contamination has migrated, including the river. Pond 5 and its dikes cover an area of about 76 acres. Pond 6 is immediately west and downstream of Pond 5. Pond 6 and its dikes cover an area of about 45 acres. The Former Chlorine Plant Site is about one half mile upstream of Pond 5 and has an area of about 4 acres.

From approximately 1895 to 1972, the Saltville facility was owned and used by Olin Corporation ("Olin") or its predecessors (Olin Mathieson Chemical Corporation, Mathieson Chemical Corporation and Mathieson Alkali Works) as the location for various chemical manufacturing operations. Mathieson Chemical Corporation constructed a mercury cell chlor-alkali plant (also referred to as the chlorine plant) in 1950. The chlorine plant produced chlorine gas and sodium hydroxide by passing brine, obtained by solution mining salt deposits in the area, between electrodes. The cathode used in this process contained mercury and leakage from the electrode is considered the source of mercury in the pond wastes. The electrical current passing through the brine caused the formation of chlorine gas at the anode through electrolytic oxidation. At the same time a sodium amalgam was formed at the cathode. The amalgam was passed into a decomposing tower where the sodium was separated by flushing the water from the sodium hydroxide. Much of the mercury lost in this process was solubilized and passed into Pond 5 in the sludges and brine. Additional mercury was lost through poor operating procedures. Mercury losses were estimated at 100 pounds per day during the early stages of this process.

Environmental studies of the Site began in conjunction with heightened concern about mercury discharges nationwide. An investigation of the chlorine plant site and the adjacent river by Olin, the Commonwealth of Virginia, and local agencies during the late 1960's revealed mercury contamination at the Site including in the river. In 1970, as a result of mercury concentrations found in fish, both Virginia and Tennessee placed a ban on fishing in the river. Both bans were later modified (Tennessee's in 1972, Virginia's in 1974) to permit fishing on a catch and release basis.

In 1978, a Task Force was formed which included the Virginia State Water Control Board, Virginia Attorney General's Office, Tennessee and Virginia State Departments of Health, Tennessee Valley Authority, and EPA. The Task Force required Olin to conduct studies to identify the sources of mercury contamination at the Saltville facility, and negotiated cleanup measures with Olin to reduce mercury input to the river.

Under a special order issued in 1982 by the Virginia State Water Control Board, Olin dredged contaminated sediments from a 1000 foot section of the river adjacent to the chlorine plant site. The excavated sediments were placed on the chlorine plant site and covered with 2 feet of clay and 6 inches of topsoil. This project was supplemented by the construction of a diversion ditch around the western, upstream side of Pond 5 (the Western Diversion Ditch) to reduce surface water flow onto the pond.

EPA proposed the Saltville Waste Disposal Ponds Site for inclusion on the National Priorities List ("NPL") in December 1982, and placed the Site on the NPL on September 8, 1983, 48 Fed. Reg. 40658. In July 1986 and August 1986, EPA conducted a risk assessment and feasibility study ("FS"), respectively. These reports were based on existing data and available information supplied by the Saltville Task Force and Olin. EPA did not perform a remedial investigation ("RI") at this Site, because of the available data and continuing sampling effort being conducted under the 1982 special order between Olin and the Virginia State Water Control Board. EPA decided to conduct a risk assessment based on all available data to determine if data gaps existed. Several data gaps were identified in the 1986 risk assessment. The 1986 FS developed alternatives based on the available data; however, more data was deemed necessary to develop a final cleanup. Based on the 1986 risk assessment and FS, EPA issued a Record of Decision ("ROD") on June 30, 1987. This ROD required the design and construction of interim remedial actions (Operable Unit 1) and the implementation of a detailed Remedial Investigation/Feasibility Study for (“RI/FS”) for Pond 5, Pond 6 and the Former Chlorine Plant Site (collectively identified as Operable Unit 2) and the river (Operable Unit 3). Olin entered into a Consent Decree with EPA in 1988, agreeing to implement the interim remedial actions and to conduct the additional RI/FS studies.

In June 1989, Olin submitted the Work Plan for the additional RI/FS studies of Operable Unit 2 (“OU2") and Operable Unit 3 (“OU3"). Field activities for the RI/FS began in December 1988. EPA agreed to permit Olin to begin installation of ground water wells prior to final Work

Plan approval. The final RI and risk assessment reports were accepted by EPA in December 1994, and the final FS was accepted by EPA in January 1995.

The interim remedial actions of the OU1 ROD involved the design and construction of a surface water diversion ditch around the eastern side of Pond 5, as well as a treatment plant to handle ground water collected at Pond 5. Both of these interim remedial actions are complete and operational. The discharge from the Pond 5 Treatment Plant has consistently been in compliance with the discharge limits established by the Virginia State Water Control Board. The interim remedial actions addressed the most immediate needs of the overall cleanup process at the Site (i.e., to divert the majority of the surface water from coming in contact with the mercury-contaminated waste in Pond 5 and treat the ground water from Pond 5 discharging to the river via the Pond 5 decant structure).

In January 1995 the OU2 Proposed Plan was issued by EPA. The OU2 Proposed Plan addressed remediation of the source materials (process waste contained in Pond 5 and Pond 6 and the contaminated soils and sediment at the Former Chlorine Plant Site) and ground water. However, after considering the comments provided by the public on the Proposed Plan, EPA decided that the OU2 ROD would address only Pond 5 and Pond 6. The Former Chlorine Plant Site (including ground water beneath that area) would be addressed along with the impact of mercury contamination on the river in OU3, the final operable unit for the Site.

A Remedial Design/Remedial Action ("RD/RA") Consent Decree signed by EPA and the Olin Corporation for Operable Unit 2 (Ponds 5 and 6) of the Saltville Site was entered in the U.S. District Court for the Western District of Virginia on July 29, 1997.

II. Discussion of Remedial Objectives

EPA has organized its cleanup activities at the Site into several Operable Units. EPA has conducted or is currently conducting the following remedial response activities at the Site under the authority of the Comprehensive Environmental Response Compensation and Liability Act of 1980, as amended ("CERCLA"), 42 U.S.C. Section 9601 et seq., commonly referred to as "Superfund":

- Remedial Action for Operable Unit 1 ("OU1") which addressed the construction of a surface water diversion ditch around the eastern side of Pond 5, as well as a treatment plant to handle ground water collected at Pond 5. These actions were addressed as interim remedial actions documented in a ROD that was issued by EPA on June 30, 1987. The Remedial Design and subsequent Remedial Action for these interim remedial actions were performed by the responsible party pursuant to the OU1 Consent Decree. Both of these interim remedial actions are complete and operational. The interim remedial actions addressed the most immediate needs of the overall cleanup process at the Site (i.e., to divert the majority of the surface water from coming in contact with the mercury-contaminated waste in Pond 5 and treat the ground water from Pond 5 discharging to the

river via the Pond 5 decant structure).

- Remedial Action for OU2 which addresses the source materials (process waste contained in Pond 5 and Pond 6) and ground water. Specifically this response action will include a RCRA Subtitle "C" compliant cap over Pond 5 (75 acres), a permeable cover over Pond 6 (45 acres), interception of a shallow ground water aquifer and neutralization of the Pond 6 discharge. These actions are documented in the OU2 ROD which was issued by EPA on September 29, 1995. The Remedial Design and subsequent Remedial Action for OU2 will be conducted by the responsible party pursuant to the OU2 Consent Decree which was entered in U.S. District Court on July 29, 1997. The responsible party has submitted the RD workplan and the design phase is estimated to be completed in 18 to 24 months. Remedial Action is scheduled to start in the summer of 1999.

Operable Units 1 and 2 do not address all risks associated with the Site. An RI/FS for OU3 will investigate the existing conditions and possible remediation of the adjacent river. Elevated levels of mercury in biota from the river, as far as 70 miles downstream of the Site, have been documented in a preliminary screening report issued by U.S. Fish and Wildlife Service. A preliminary ecological risk assessment has been drafted and submitted to EPA by the responsible party. EPA, with the assistance of the Biological Technical Assistance Group and technical resources from EPA's Environmental Response Team, is currently reviewing this document. This document, when finalized will become an integral part of the OU3 RI/FS which is estimated to be complete in the Fall of 1998.

Also included in OU3 is the a 4 acre parcel which was the area within the responsible party's industrial facility where the chlorine plant was located. A preferred alternative for remediation of the contaminated soils, sediments and ground water for this part of the site was included in the OU2 Proposed Remedial Action Plan ("PRAP"). However, after considering the comments provided by the public on the PRAP, EPA decided to defer the remedy decision for the chlorine plant site and include this area in OU3. The responsible party is currently conducting a Supplemental Site Characterization Study at the chlorine plant site. This study is estimated to be complete in late 1998.

Remedial Actions for OU3 (the river and the chlorine plant site) will be selected by EPA and presented in one or more additional ROD(s). The responsible party is conducting these studies pursuant to the terms of the OU1 Consent Decree.

III. Recommendations

The RI/FS for the river and the Supplemental Site Characterization Study for the chlorine plant site will investigate the existing conditions and possible remediation of soil, surface water, sediment and ground water for these specific areas of the Site. The responsible party is proceeding with the RD/RA for Ponds 5 and 6 to address the source material and ground water in those areas of the Site. Remedial Actions for OU3 (the river and the chlorine plant site) will be

selected by EPA and presented in one or more additional ROD(s).

IV. Statement on Protectiveness

The remedy is not at this time protective of human health and the environment. As discussed above EPA is taking steps to make the remedy protective.

V. Next Five Year Review

The next five-year review will be completed no later than May 2001.